BANGALORE DEVELOPMENT AUTHORITY

RFP No: BDA/Drone Survey/2024 Date: 30-05-2024

REQUEST FOR PROPOSAL (RFP)
For
Hiring Services for Drone Survey Based 3D Model Generation for BDA Area (Excluding BBMP AREA)

MAY 2024

Bengaluru Development Authority
T Chowdaiah Road
Kumara Park (West)
Bengaluru -560 020

Tel: 080-23443206, Website: www.bdabangalore.org

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Section 1: Project Data Sheet

1.	Details of Scope of Project	Drone Survey Based 3D Model Generation for BDA Area (Excluding BBMP area). (For more details refer **Section 6)**
2.	Name of the Client	Bengaluru Development Authority (BDA)
3.	Designation and Address of the Client (for communication)	Commissioner Bangalore Development Authority T Chowdaiah Road Kumara Park (West) **Bengaluru -560 020**
4.	The Currency for payment	Indian Rupees
5.	Submission of Bid	**e-Procurement website – https://kppp.karnataka.gov.in**
6.	a) Registration Fee: b) Amount of Earnest Money to be Deposited with the Tender along with prime document (Technical Offer)	Tender Processing Fee: Each bidder shall pay non-refundable Tender Processing fee as per the e-Procurement portal through any of the e- Payment Modes: National Electronic Funds Transfer (NEFT) Over the Counter (OTC) – designated ICICI bank branches located across the country, Credit Card, Direct Debit, Internet Banking. **Earnest Money Deposit (EMD): Rs.2,00,000/- (Two Lakhs only).** Payment only through e-Payment modes as given above for the tender processing fee. For further details regarding e-Payment, please refer to the **e-Procurement website – https://kppp.karnataka.gov.in**

7.	**Tender Schedule**	
1	Date of uploading Tender in e-o-portal	31-05-2024
2	Last date for sending pre-bid queries	04-06-2024 at 4.00PM
3.	Pre Bid Meeting	05-06-2024 at 11.00 AM at Office of BDA
4.	Last Date and time of submission of tender	15-06-2024 at 5.30 PM
5.	Technical bid opening of tender	18-06-2024 at 11.00 AM
6.	Financial Bid opening of tender for qualified bidder	21-06-2024 at 11.30 AM

Section 2: Instructions to Bidders

1. Client

The Bengaluru Development Authority (BDA) hereinafter called the '**Client"** proposes to engage the services of a Consultant to carryout the Drone Survey Based 3D Model Generation for BDA Area (Excluding BBMP area).

2. Tender Documents

The tender document consists of Technical Proposal and Financial Proposal

3. Pre-Bid Meeting

A pre-bid meeting will be held on the date, time and venue indicated in this document (project data sheet) to clarify the issues, if any, raised by the bidders (also referred to as consultants/contractors/agency in the rest of the document). Bidders have to submit their queries in writing before the due date specified in Sec.1.

The queries may be sent to the E-Mail ID**:** **tpm@bdabangalore.org.** BDA will respond to any request for clarification on the Tender Document, received before the due date. Clarifications will be uploaded in the e- procurement portal.

4. Preparation of Tender

The Bidder must submit the following:

1. Document provided for the purpose of tendering including letters/ addendum issued to bidders amending the tender documents.
2. A copy of each of the following, currently valid certificates and documents of the Company.
    a) Covering Letter as shown in Appendix-1
    b) Particulars in the Form as shown in Appendix-2

c) Certificate of Registration of the Consultant issued by competent authorities. i

d) The name of the person legally authorized to enter into contracts on behalf of the company/firm/partnership and his position in the company/firm/partnership.

5. Earnest Money Deposit

1. Earnest Money (EMD) has to be deposited for the item as mentioned in the project data sheet. Earnest money deposit furnished by the bidders, who are unsuccessful and whose tenders are rejected, will be returned soon after the work order is issued to the successful bidder.
2. Earnest Money Deposit will be forfeited in the following circumstances.

   a. If the tender is withdrawn or modified after submission by the bidder.
   b. If the Bidder fails to execute the agreement after acceptance of the tender.
   c. If items/services/deliverables are not delivered within the specified period.
   d. If items/services/deliverables supplied/provided are not in accordance with the specification.

6. Submission of Tenders

Bidders are required to upload the Tender documents namely (a) Technical Proposal and (b) Financial Proposal SEPARATELY.

The Technical offer must contain the following:

1. Technical documents duly filled
2. Technical proposal explaining the methodology, schedule, plan, deliverables, requirements if any, etc.,
3. Technical brochures, if any, of the quoted items
4. Relevant certificates and documentation evidencing the capacity, capability and track record of the bidder in the lines of tendered items and their requirements.

The Financial offer must contain the following:

1. The financial offer as per the format provided in the portal shall be submitted. The bidder shall quote the total lumpsum cost (**inclusive of GST and other taxes**). Bidder **shall not quote the unit rate per sq.km**
2. The financial offer failing to comply with the Tender will be rejected.

7. Consortium Bids

Joint Venture/ Consortium is **not** allowed.

8. Subcontracting or Subletting of Work

Any Subcontracting or subletting of work under the contract is not permitted.

9. Quantities

The quantities of the deliverables may be increased or decreased up to 10% of the total area even after the finalization of the rate of the successful bidder without change in payment. The successful bidder shall provide services without additional cost for such increased or decreased quantities (10% of the total area) that may be finalized. Further the successful bidder shall supply/provide services for any additional quantities of deliverables at the same price for a period of one year for BDA. The authority reserves the right to increase the quantity up to 15% (**Over and above 10%**) for which additional payment will be made on a pro-rata basis (in terms of cost per Sq.km).

10. Consideration of offers

The Client DOES NOT BIND himself to accept the lowest or any tender and reserves the right to REJECT any or all offers without assigning any reason. The Client also reserves the right

a. To allot the order to MORE THAN ONE bidder at the lowest rate/price accepted,

b. To DISREGARD all nonconforming, non-responsive or conditional offers and

c. To NEGOTIATE the Scope of services, Contract price and the Terms of the Contract with the bidder(s) who quote the lowest rates/price.

The decision of the Client in this regard is final and binding.

11. Disqualification of a Bidder

The bidder will be disqualified in the following circumstances:

Technical Rejection

1. Bids which do not conform to unconditional validity of the bid as prescribed in the Tender.
2. If the information provided by the Bidder is found to be incorrect/misleading at any stage/time during the Tendering Process.
3. Any effort on the part of a Bidder to influence the bid evaluation, bid comparison or contract award decisions.
4. Bids without the power of authorization and any other document consisting of adequate proof of the ability of the signatory to bind the Bidder.

5. Failure to furnish proof for information provided
6. The revelation of Prices in any form or by any reason before opening the Commercial/Financial Bid.
7. Submission of the commercial/financial bid details as part of the technical proposal.
8. Failure to furnish all information required by the Tender Document or submission of a bid not substantially responsive to the Tender Document in every respect.
9. Bidders not quoting for the complete scope of Work as indicated in the Tender documents, addendum (if any) and any subsequent information given to the Bidder.
10. Bidders not complying with the Technical and General Terms and conditions as stated in the Tender Documents.
11. The Bidder not conforming to the unconditional acceptance of full responsibility of providing services in accordance with the scope of work and Service Level Agreements of this tender.
12. If the bid does not conform to the timelines indicated in the bid.
13. Failure to upload Annexure / Appendix on e-Procurement Platform.
14. If the bidder fail to comply DGCA Drone Rules, 2021 and its amendments thereon issued by Ministry of Civil Aviation.

Commercial Rejection

1. Incomplete Financial Bid
2. Financial Bid that does not conform to the Tender's price bid format.
3. Failure to upload Annexure / Appendix on the e-Procurement Platform

12. Expenses incurred in the preparation of the tender

The BDA shall not be responsible or pay for any expenses or loss which may be incurred by the bidder in the preparation and submission of his Tender in response to the Invitation to Tender.

13. Currency

The currency of the contract, for all financial matters, shall be in Indian Rupees. The prices in the financial offer shall be in Indian Rupees and rounded off to the nearest Rupee.

14. Conditions of Contract

The successful bidder will be required to enter into a Contract (Agreement) with the Client. The Contract shall be on the basis of the conditions of the contract for service/supply (SECTION 2 & 3) and the form of contract (SECTION 4) provided in this Document.

The terms and conditions for the award of the project are as follows

i. Award of the contract will be given to the agency quoted the lowest (L1 bidder)

ii. Failure to satisfy the pre-qualification criteria shall lead to the rejection of bids.

15. Evaluation of Proposals

Opening of the Financial Offer will be preceded by the evaluation of the Technical Proposal, vis-à-vis the capability, capacity, and credibility standing of the bidder. Evaluation of the Technical Proposal will be done by the Technical Evaluation Committee constituted for the purpose. After the demo is completed, those vendors who are technically qualified will be notified and the financial bid of those bidders only will be opened.

16. Awards and Preparation of Contract

The contract will be awarded after negotiations with a successful bidder. The successful bidder will be required to enter into a Contract Agreement with the Client. The Contract shall be on the basis of the conditions of contract for service / supply (SECTION 2 & 3) and the form of contract (SECTION 4) provided in this Document.

17. Warranty

All data / deliverables shall be covered with 1-year warranty; the warranty period commences from the date of final acceptance of the deliverables. In case of any disputes or errors identified in the delivered data, the bidder shall immediately rectify and deliver the results to the Client without additional cost. In case of delay/failure in completion of such delivered data/ products shall be liable for penalty as per the tender Specification.

18. Performance Bond

The bidder has to furnish Performance Bank Guarantee @ 10% of the total work order throughout the project and warranty periods within one week of signing the contract. Failure to submission of performance Bank Guarantee shall make the bidder disqualified and the contract shall be made with the next successful bidder. In such events, the EMD submitted by the disqualified bidder shall be forfeited. The format for Performance Bond shall be as in the Form Set out in Section – 5.1.

19. Advance Bank Guarantee

The bidder has to furnish an Advance Bank Guarantee @ 10% of the total value of the work order with a validity of the entire project period, if he wishes to receive an advance amount of 10% of the project value from the client, the same shall be submitted along with the Invoice for receipt of advance. On receipt of this, the payments shall be processed. The format for Advance Bank Guarantee is as in the Form set out in Section – 5.2.

20. Language of Bids

Bids submitted by the Bidder and all the correspondence and documents relating to the bids exchanged by the Bidder and the BDA shall be in the Kannada/ English language. Any printed literature furnished by the Bidder maybe written in another language so long the same is accompanied by a duly attested English translation in which case, for purposes ofinterpretation of the bid, the English translation shall govern.

This bid should be filed in Kannada/English language only. If any supporting documents submitted are in any language other than English, translation of the same in the English language is to be duly attested by the bidder.

21. Amendment of Tender

a. At any time prior to the last date for receipt of Bids, BDA, may for any reason, whether at its own initiative or in response to a clarification requested by the Bidders, modify the Tender conditions/requirements by issuing an addendum/corrigendum. Any such amendments issued along with the original Tender document will constitute a Revised Tender.

b. Any addendum/corrigendum will be uploaded on the **https://kppp.karnataka.gov.in** website. Prospective Bidders are requested to visit the website frequently to check for any amendments.

22. Bid validity period

a. Period of validity of bids

Bids shall remain valid for 90 days after the last date for submission of Tender prescribed by BDA. A bid valid for a shorter period may be rejected as non-responsive. However, the prices finalized after opening the Tenders shall not increase throughout the period of implementation and operation of the contract.

b. Extension of period of validity

In exceptional circumstances, the BDA may request the Bidder(s) for an extension of the period of validity of the bid. The request and the responses thereto shall be made in writing. In such cases, the validity of EMD shall also be suitably extended by the bidder.

23. Pre-Qualification Criteria

Sl. No	Criteria	Documents Required
1.	Submission of covering letter as required in the given format	(Refer **Appendix-1**)
2.	Furnishing of the Power of Attorney	Power of Attorney executed by the Bidder in favor of the Principal Officer or duly Authorized Representative, certifying him/her as an authorized signatory for the purpose of this Tender.
3.	The bidder shall be a company registered in India under the Companies Act 1956/2013 or a Partnership Firm registered under LLP Act, 2008	Copy of Certificate of Incorporation and Commencement of Services. Registration under the Companies Act/ Partnership Act. (Refer Appendix -2 : Particulars to be submitted by bidder)
4.	The Bidder should hold a valid Goods and Service Tax Registration Certificate (GST) and Permanent Account Number (PAN) issued by Income Tax Department.	Copy of Valid Goods and Service Tax registration certificate (GST), and Permanent Account Number (PAN) issued by the Income Tax Department should be provided.

5.	The bidder shall not be under declaration of ineligibility for corrupt or fraudulent practices or deficiencies of services or blacklisted with any of the Government agencies at the time of bidding.	A declaration signed by an Authorized signatory as per Appendix-3.
6.	The bidder should have a minimum average annual financial turnover of Rs.1 crore related from the drone survey, GPS survey- related activities in the last three completed financial years i.e., 2020-21,2021-22 and 2022-23	Certified copy from Charted Accountant shall be provided as per the format given in Appendix-4
7.	The Bidder shall enclose the Audited balance sheet and profit and loss statement of the Bidder the last three completed financial years i.e., 2020-21,2021-22 and 2022-23	Enclose Audited balance sheet
8.	The Bidder shall enclose Proof of payment/ compliance for income tax for the financial years 2020-21,2021-22 and 2022-23 and a statement of no Income tax dues from the Financial Officer of Bidder for the 3 years.	Enclose Proof of payment/ compliance for income tax
9.	Bidder shall submit proof of experiencefor completion of atleast **two** projects using drone survey to any of the State/Central Government /Government Undertakings / Private Sector/International Agencies with a minimum order of Rs. 50 lakhs each in the last 3 yrs.	Copies of completion certificate with relevant Work Orders / Purchase Orders/ Letters from clients are to be provided.
10.	Professional survey grade PPK enabled UAS/Drone – Bidder must have a minimum of 4 nos. of Professional survey grade PPK enabled UAS/Drone with associated oblique camera for achieving at least 03 cm GSD at the time of submission of a bid. Drones should have compliance with DGCA Drone Rules, 2021.	Supporting documents should consist of a copy of the valid proof of ownership/lease of each drone to be engaged for providing services along with its Unique Identification Number (UIN) of each drone. Declaration should be submitted as per Appendix-5

11	GNSS Receiver The Bidder must have a minimum of 8 nos of Dual frequency GPS instruments Capable of tracking and logging Multi-frequency & multi-constellation signals	Supporting documents should consist of a copy of the valid proof of ownership/lease along with a calibration certificate. Declaration should be submitted as per Appendix-5
12	Drone data processing software The Bidder must have a minimum of two licenses of standard drone data processing software	Supporting documents should consist of a copy of the valid proof of ownership/lease. Declaration should be submitted as per Appendix-5
13	**Manpower: Project Coordinator - 01Person** Minimum qualification: ME /M.Tech/M.Sc with a minimum of 6 years of experience in Drone/DPGS/Aerial Survey out of which a minimum of 3 years of experience as team leader/project manager in Drone/DPGS/Aerial Survey works with training in GIS and photogrammetry software. **or** BE/B.Tech /B.Sc with a minimum of 10 years of RS/GIS/DGPS survey experience out of which a minimum of 4 years of experience as team leader/project manager in Drone/DPGS/Aerial Survey works works with training in GIS and photogrammetry software	CV with the signature of Project Coordinator.
14	**Manpower: Drone Data Processing Specialist – 02 Persons** Will be working under the Project Co-Ordinator. Responsible for preparing the flight plans, GCP plans, block adjustment, DSM/DTM generation, Ortho rectification and mapping. Minimum qualification; • BE/B.Tech with minimum 3 years of experience in Drone data processing and ORI generation out of which a minimum 1 year as team leader **or** Diploma in civil engineering with	CV with the signature of drone data processing specialist.

	minimum of 6 years of experience in Drone /Aerial data processing and ORI generation or • Master degree in science with 3 years' experience in Drone data processing and ORI generation works out of which 1 year as team leader Preference: 1. Drone Remote Pilot License holder 2. Training in Photogrammetry data processing and mapping 3. Experience in spatial database management. • Knowledge of the local language	
15	**Hardware Systems** – Minimum requirements Work Stations- 04 nos. • RAM – 64 GB • Processor Speed – As necessary • Internal storage – 2 TB • Graphics card – Nvidia Quadro4 - 1 GB or equivalent • Monitor Size – 19 inches or higher STORAGE Network Storage System: 02 nos. of Minimum 10 TB (in RAID 5 configuration)	Supporting documents should consist of a copy of the valid proof of ownership and specifications.
16	Bidder shall enclose compliance statement for technical specifications	Relevant document
17.	Submission of Declaration of Acceptance of Terms & Conditions to TENDER in the given format	Refer Appendix-6

Section 3: General Conditions Of Contract

1. **Scope of work:** The detailed scope of work required by the Client and detailed specifications and quantities, are listed in **Section 6**. The Bidders are expected to fully comply with the requirements.
2. **Variation in quantity:** The quantities indicated in Section 6 and in **Format of the commercial offer** are approximate. The successful bidder shall agree to complete the services as per the requirement of the authority, as mentioned in this RFP. The price shall remain the same if the variation in the area is +/- 10%. The authority reserves the right to increase the area up to 15% beyond 10%. In such case, the successful bidder will be paid for the increased area (15% beyond 10%) on pro-rata basis (in terms of cost per Sq.km)
3. **Rate / price:** The total cost quoted, in the ***format of a Commercial Offer***, shall include basic costs, duties, all taxes of the Union and the State, insurance, and labour until the completion of all services and deliverables to the Client's site with full satisfaction. The total cost quoted shall include all costs related to travel, stay, equipment, and insurance of staff / equipment for carrying out the activity.
4. The bidders are requested to analyses and assess the location of project sites, their terrain nature and any other details which shall be a factor in carrying out the desired activities. The same shall be explicitly mentioned in the proposal of the bidder. Any additional items that may require for the completion and successful submission of deliverables shall be the responsibility of the bidder. The cost of such additional items shall also be considered during the financial evaluation of the offer.
5. **Warranty :** All data / deliverables shall be covered with 1-year warranty; the warranty period commences from the date of final acceptance of the deliverables. The deliverables shall be verified / tested anytime by BDA. The errors if any as pointed out by QA/QC team shall be corrected by the bidder within 7 days of the report being received. Corrections shall be attended to within the specified time limit. For delay in submission of corrected data, penalty will be levied as per service level agreement clause.
6. **Deliverable**: The final acceptance of the services and deliverables shall be made after the delivery of complete items as per the RFP and delivered with a technical report. If the results are not within the margins specified by the Client, the activity shall, if required, be repeated and necessary corrective action shall be taken by the bidder to ensure that the specification is met and proved.

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Section 3.1: Special Conditions of Contract

1. Contract Price

The contractor (the bidder) in signing the contract confirms that he is aware of all the costs or charges to be incurred and which are necessary to carry out the Services and deliverables required under the contract.

No claim shall be accepted by the Client due to the contractor's lack of knowledge in respect of any matter affecting the rate/price of any of the items.

2. The successful bidder shall submit a performance bank guarantee for 10% of the total project value until the completion of the project and warranty period. The performance bank guarantee shall be submitted immediately upon receipt of the work order from the client.

3. The warranty period is for one year and starts from the date of acceptance of completion of the project by the Client.

4. **Payment Schedule –** The payment to the successful bidder from the Client will be as follows:

Sl. No	Milestone	Deliverables from Agency	Time Line in Weeks	Payment terms
1	Submission of PBG and Contract Sign-off	PBG for 10% of total contract value	T	NIL
2.	Project initialization	Office establishment and team mobilization, training and orientation	T to T+1	NIL
3.	Implementation Plan	Submission of methodologies adopted, GPS survey plan, drone survey acquisition and processing plan,	T+1 to T+2	NIL
4.	25 % of the work completion	Deliverables and quality standards as specified in the RFP	T+ 3 to T+5	20%
5.	25 % of the work completion (totally 50% of the work should be completed)	Deliverables and quality standards as specified in the RFP	T+6 to T+7	20%
6.	25 % of the work completion (totally 75% of the work should be completed)	Deliverables and quality standards as specified in the RFP	T+8 to T+9	25%

S.No	Milestone	Deliverables from Agency	Time Line In Weeks	Payment terms
7.	25 % of the work completion (totally 100% of the work should be completed)	Deliverables and quality standards as specified in the RFP	T+10 to T+ 11	25%
8.	Final deliverables acceptance from the Client.	Deliverables and quality standards as specified in the RFP	T+12 to T+14	10%

Note: Client will refer all deliverables to Karnataka State Remote Sensing Applications Centre (KSRSAC) for verification. Release of payment at each stage shall be made by the Client to the Consultant only after the respective Deliverables are certified by KSRSAC to its satisfaction.

The details of scope of work, services required from the bidder, project areas details are given in **Section 6**.

5. Force Majeure

a) Neither Party to this contract shall be liable to the other for any loss or damage which may be suffered by the other due (directly) to the extent and for the duration of any cause beyond the reasonable control of the Party unable to perform ("Force Majeure") events such as but not limited to acts of God not confined to the premises of the Party claiming the Force Majeure, flood, drought, lightning or fire, earthquakes, strike, lockouts beyond its control, labour disturbance not caused at the instance of the Party claiming Force Majeure, acts of Government or other competent authority, war, terrorist activities, military operations, riots, epidemics, civil commotions etc. No failure, delay or other default of any contractor or sub-contractor to either Party shall entitle such Party to claim Force Majeure under this Article.

b) The Party seeking to rely on Force Majeure shall promptly, within 2 days, notify the other Party of the occurrence of a Force Majeure event as a condition precedent to the availability of this defence with particulars detail in writing to the other Party and shall demonstrate that it has and is taking all reasonable measures to mitigate the events of Force Majeure.

i. In the event the Force Majeure substantially prevents, hinders or delays the successful bidder's performance of Services necessary for the project's implementation or the operation of the Project's critical business functions for a period in excess of 3 days, the BDA may declare that an emergency exists. However, when the situation arising out of force Majeure comes to an end in the

assessment of BDA, the successful bidder shall resume normal activities under this contract immediately. If BDA considers it necessary, may grant an extension of time to the successful bidder for resuming normal activities under

this contract. If the successful bidder does not resume normal activities immediately or within the extended period, if any, granted by the BDA, the BDA will have the option to invoke the Performance Guarantee, levy liquidated damages, obtain substitute performance from an alternate supplier at the cost of the successful bidder and/or terminate this contract.

ii. Notwithstanding the terms of this Article, the failure on the part of the successful bidder to implement any disaster contingency planning, insurance coverage and back-up and other data safeguards in accordance with the terms of the Tender or this CONTRACT against natural disaster, fire, sabotage or other similar occurrences shall not be an event of Force Majeure.

5.1. Default

As a result of Force Majeure, neither party shall be considered in default in the performance of his obligations hereunder, which as implied herein, shall mean Acts of God, War (declared and undeclared), riots, civil commotions, revolutions, hostilities, strikes, epidemics, accidents, fire, floods, earthquakes, explosions, blockades, nuclear hazards, extreme weather conditions, cyberspace hackers and any other cause similar to the kind herein mentioned or of equivalent forces occurring within the Republic of India which is beyond the control of the parties, unavoidable and which could not reasonably be foreseen which renders impossible the fulfilment of the contract.

5.2 Notice of Termination

If the work is not performed to the satisfaction of the client in the extended time period, given by the client, the contract with the contractor shall be terminated by the client by giving 10 days' notice.

If a termination notice is given due to Force Majeure, the termination shall become effective upon receipt by the Contractor of the Client's notice to terminate.

5.3 Settlement of Disputes

In the event of any dispute arising between BDA and the selected bidder in connection with, or arising out of the contract or Tender or the execution of the Project; the matter in dispute which cannot be settled amicably within thirty (30) days after receipt by one Party of the other Party's request for such amicable settlement shall, in the first place, be referred to the ACS, UDD GoK. Either party may refer a dispute to the ACS, UDD, GoK who shall give a decision in writing within 30 days of reference of dispute. Either party may refer a written decision of the ACS, UDD, GoK to arbitration. If neither party refers the disputes to arbitration within 30 days of the date of such decision, the ACS, UDD, GoK decision will be final and binding.

In case either party is not satisfied with the decision of the ACS, UDD, GoK,they can institute arbitration proceedings as per Indian Arbitration and reconciliation Act,

1996, after a 30-day notice period.

Any dispute or difference or claim arising out of, or in connection with, or relating to the present contract or the breach, termination or invalidity thereof, shall be referred to and settled under the Arbitration and conciliation Center, Karnataka (domestic and international) rules 2012, by one or more Arbitrators appointed in accordance with its rules.

Arbitration proceedings shall be held in Bengaluru and the language of the arbitration proceedings and that of all documents and communications between the parties shall be English.

5.4 Duties and Taxes

The Contractor shall be responsible for the payment of customs or import duties, taxes including GST and all other levies that are enforced within India for the time being in force. Any effect of future legislation promulgated after the signing of the contract and before the delivery of the above will only be considered on the presentation of supporting documents by the Contractor and verification of the same by the Client.

Section 4: Form of Contract

THIS CONTRACT made on the …….. Day of …… 2024 by and between the BDA, having its office at, T Chowdaiah Road, Kumara Park (West) Bengaluru 560 020 represented by the Commissioner (hereinafter called "the Client") of the one part and M/s. …….. whose Registered Office is at ……and are duly registered under the appropriate Laws of the land and having …….. as their address in India (hereinafter called "the Contractor/ Consultant ") of the other part.

WHEREAS the Client is desirous that hiring of services for Drone Survey Based 3D Model Generation for BDA Area (Excluding BBMP) as in the Scope of Services in the Tender Document, be made in accordance with the Conditions of Contract as contained inthe Tender and the Contractor is willing and has accepted to undertake the above services and has submitted an offer and the Client has accepted the same for the following viz:

Drone Survey Based 3D Model Generation for BDA Area (Excluding BBMP)

NOW THESE PRESENT WITNESSES and it is hereby agreed and declared by and between the parties hereto as follows:

1. In this contract, the words and expressions shall have the same meaning as are respectively assigned to them in the Conditions of Contract for Supply in the Tender Document.

2. The following documents shall be deemed to form and be read and construed as part of the contract viz:
   i. The Tender Notification issued by the Client inviting Tenders;
   ii. The Tender Document issued to the Contractor by the Client;
   iii. Pre-bid clarification issued by the Client
   iv. The offer to carry out the services submitted by the Contractor;
   v. The Letter of Acceptance from the Client;
   vi. The Conditions of Contract for Supply included in the Tender Document.

3. In consideration of payments to be made by the Client to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Client to perform the Services in conformity in all respects with the provisions of this contract
4. The Client hereby covenants to pay the Contractor in consideration of the performance of the above Supplies and Services a sum of Rs. …… (Rupees ……) at the times and proportion to this contract read with Conditions of Contract herein before referred to.
5. The Contractor shall complete the project activities, as per RFP to the Client on or before the specified period.
6. The items supplied by the Contractor shall carry warranty for a period of one year.

Service Level Agreement (SLA)

The purpose of the SLA is to ensure that proper control mechanisms are in place to provide high quality, uninterrupted services to BDA by the Agency/Contractor. SLA is an agreement that is part of the contract between the Agency/Contractor and the Client, violation of which will lead to Agency/contractor getting penalized accordingly.

Service Level Agreement

Sl. No	Milestone	Deliverables from Agency	Time Line in Weeks	Payment terms	Penalty
1	Submission of PBG and Contract Sign-off	PBG for 10% of total contractvalue	T	NIL	NIL
2.	Project initializatio n	Office establishment and team mobilization, training and orientation	T to T+1	NIL	NIL
3.	Implementatio nPlan	Submission of methodologies adopted, GPS survey plan, drone survey acquisition and processing plan,	T+1 to T+2	NIL	NIL
4.	25 % of the work completion	Deliverables and quality standards as specified in the RFP	T+ 3 to T+5	20%	0.5% of the total project cost per week till completion of the milestone
5.	25 % of the workcompletion (totally 50% of thework should be completed)	Deliverables and quality standards as specified in the RFP	T+6 to T+7	20%	0.5% of the total project cost per week till completion of the milestone
6.	25 % of the workcompletion (totally 75% of thework should be completed)	Deliverables and quality standards as specified in the RFP	T+8 to T+9	25%	1 % of the total project cost per week till completion of the milestone
7.	25 % of the workcompletion (totally 100% of the work should be completed)	Deliverables and quality standards as specified in the RFP	T+10 to T+ 11	25%	1 % of the total project cost per week till completion of the milestone

Sl. No	Milestone	Deliverables from Agency	Time Line in Weeks	Payment terms	Penalty
8.	Final deliverables acceptance fromthe Client.	Deliverables and quality standards as specified in the RFP	T+12 to T+14	10%	Cumulative penalties will be deducted

General Quality Metrics for the services offered

Agency/Contractor's quality metrics will be evaluated under two categories viz, Quality performance, Response time. BDA shall provide its deliverable acceptance/rejection report within two weeks from the time of the submission of the deliverable's submission of the Agency. The penalty will be imposed in case of poor performance and response time. The details are given in the below table.

Table 2. Quality Metrics

Criteria	Excellent	Good	Poor	Penalty
Deliverables Quality Performance	More than 98 %	95% -98%	Less than 95%	0.25 % of total project cost per week in case of quality performance is poor.
Response Time for Correcting/improving the deliverables and resubmission	Within One Week	Within Two Weeks	More than Two Weeks	0.25 % of total project cost per week in case of response time is poor.

If the cumulative penalties exceed 10 % of the total project cost the CLIENT may decide to terminate the contract and confiscate the PBG among other conditions of termination.

IN WITNESS whereof the parties hereto have hereunder set their respective hands and seals on the day, month and year first above written.

Signed by a duly authorized signatory for and On Behalf of the Client	Witness Name Address
Signed by a duly Authorized Signatory for and on Behalf of the Contractor	Witness Name Address

Section 5: Bank Guarantee Format

5.1 Format for Performance Bond

The Commissioner
Bangalore Development Authority
T Chowdaiah Road
Kumara Park (West)
Bengaluru – 560 020

Sir,

Performance Bond No……

Whereas M/s. …….. (hereinafter called the Contractor) has been awarded a service Contract dated …….. of…… 2024 for a project "Drone Survey Based 3D Model Generation for BDA Area (Excluding BBMP Area) to the value of Rs…….. (Rupees……).

AND WHEREAS, under the terms of the said Contract the contractor is required to furnish to the BDA, the Authority, a Performance Bond in the form of a Bank Guarantee for a value of ten (10%) percent of the contract value of the due performance of the Contract.

AND WHEREAS the Contractor has requested the …… (Bank), who's central office is at …… to issue a Performance Bond for a value of Rs. ……..being 10% of the Contract value, to guarantee the due performance for and on behalf of the Contractor to you, should the Contractor defaults in his performance under the Contract.

NOW by this Bond, we, …….. (Bank) having address as……, agree to make unequivocally and unconditionally, payment of a sum of Rs. …….. (Rupees… ……) being TEN (10) percent of the Contract value under this Bond on your first written demand, without any reference to or contestation on behalf of the Contractor, provided the claim is received by us on or before……..

Liability of …….. (Bank) under this Bond is limited to Rs…….. (Rupees……..only) and this Bond shall be effective from……And shall be valid and binding on the Bank up to…… after which date our liability ceases. The Guarantee shall not be terminated or effected by notice of any change in the Constitution of the Bank or of the firm of Contractors or by any other reason whatsoever and the Bank's liability hereunder shall not be impaired or discharged by any extension of

time or variation or alterations in the contract value or scope of service, given, conceded, agreed to, without our knowledge or consent, by or between the parties to the said written Contract.

This Guarantee should be returned to us upon its expiry or upon fulfilment of our undertaking whichever is earlier.

Authorized Signatories

NOTE: Nothing is to be entered in this Form in the document issued to the Bidder except the initial and seal at the right-hand bottom corner, the Form is to be adopted by the Bank which provides the Performance Guarantee for preparation of its Performance Guarantee. (To be issued by a local branch of a Schedule Commercial Bank)

5.2 Format for Advance Bank Guarantee

To,

The Commissioner
Bangalore Development Authority
T Chowdaiah Road
Kumara Park (West)
Bengaluru – 560 020

Sir,

Advance Bank Guarantee No……..

Whereas M/s. …….. (hereinafter called the Contractor) has been awarded a service Contract dated …….. of…… 2024 for a for the value of Rs…….. (Rupees ……).

AND WHEREAS, under the terms of the said Contract the contractor is required to furnish to the BDA, the Authority, an advance bank guarantee in the form of a Bank Guarantee for a value of ten (10%) percent of the contract value for receipt of advance.

AND WHEREAS the Contractor has requested the……(Bank), who's central office is at …….. to issue a Guarantee Bond for a value of Rs. …… being 10% of the Contract value, to guarantee towards the advance amount to be received on behalf of the Contractor to you, should the Contractor defaults in his performance under the Contract,

NOW by this Bond, we, …….. (Bank) having address as……, agree to make unequivocally and unconditionally, payment of a sum of Rs. …….. (Rupees… ……) being TEN (10) percent of the Contract value under this Bond on your first written demand, without any reference to or contestation on behalf of the Contractor, provided the claim is received by us on or before……..

Liability of …….. (Bank) under this Bond is limited to Rs…….. (Rupees……..only) and this Bond shall be effective from……And shall be valid and binding on the Bank up to…… after which date our liability ceases. The Guarantee shall not be terminated or effected by notice of any change in the Constitution of the Bank or of the firm of Contractors or by any other reason whatsoever and the Bank's liability hereunder shall not be impaired or discharged by any extension of time or variation or alterations in the contract value or scope of service, given, conceded,

agreed to, without our knowledge or consent, by or between the parties to the said written Contract.

This Guarantee should be returned to us upon its expiry or upon fulfilment of our undertaking whichever is earlier.

Authorized Signatories

NOTE: Nothing is to be entered in this Form in the document issued to the bidder except the initial and seal at the right-hand bottom corner, the Form is to be adopted by the Bank which provides the advance bank Guarantee for preparation of its advance payment.
(To be issued by a local branch of a Schedule Commercial Bank)

Section 6: Scope of Work

6.1 Introduction

Bengaluru Development Authority (BDA) is engaged in orderly development of Area coming under its jurisdiction. BDA is planning to generate Base Map and Land use Land Cover Map based on Drone survey-based Ortho Rectified Images and Digital Elevation Models for the preparation of BDA Master Plan. In this regard, a tender is invited by BDA to hire the services of agency for Drone Survey Based 3D Model Generation for BDA Area (Excluding BBMP area).

6.2 Objectives

- To carry out the aerial survey using drone to acquire oblique/360-degree images of GSD better than 03 cm.
- Generation of High density point cloud – DSM
- Generation of DTM
- Generation of Ortho rectified Imageries (ORI) from Drone images.
- Generation of 3D Reality Mesh Model (3D Tile).

6.3 Project Area

Drone survey will be carried out for the BDA Area (excluding BBMP) covering 440 sqkms. Shape file of the area to be covered is uploaded along with the tender.

6.4 Services required from successful bidder/contractor

- The contractor shall carry out the required activities to meet the client requirement and supply the deliverables as prescribed in the RFP document.
- The contractor shall be responsible for setting up their work facility with necessary hardware and software in Karnataka State. Data, storing and processing should be only done at the offices established by the bidder in Karnataka State. This facility shall be made available till the completion of the project.
- The contractor shall be responsible for engaging the required manpower to complete the work within the specified period.
- Systems / Software and any other accessories needed for the execution of work shall be arranged by the contractor.
- Responsibility for internal QC/QA of all the deliverables before submitting for client's review.
- Responsibility of effecting corrections in the deliverables and submit final deliverables.
- Deliverables as per this Tender Specifications.
- To fulfill the other contractual obligations as per the agreement.

6.5 Methodology to be adopted

The contractor shall follow the methodologies, procedures and processing explained below for carrying out the activities. The contractor may use and execute latest technologies in addition to the methodologies specified by the client in order to achieve the quality standards ofthe deliverables.

6.6 Scope of Work

- Providing GPS Control network for the town – 3 points for every 1 sqkm area
- Drone data acquisition (nadir and oblique photographs) for generation of 3D Reality Mesh Model visualization
- Generation of DSM and DTM
- Generation of Ortho rectified images from the most nadir images.
- Preparation of 3D base map using high resolution drone image (03 cm) acquired from Drone images.
- Generation of 3D Reality Mesh Model (texturized photo realistic) for the city visualisation.

The methodology for each step is detailed below:

Control Survey

- Ground Control Network established by Survey of India and its Continuously Operating Reference Stations (CORS) system should be used to establish the ground control points/ base stations required for drone surveying activities.
- The control network points shall be surveyed using GNSS receivers of dual frequency (L1 and L2) and multi-channel capability with on-the-fly ambiguity resolution and be able to log GPS data at 1-second epochs or better.
- Sufficient no. of check points must also be surveyed with reference to existing ground SoI's control network or CORS network to check the accuracy of drone survey deliverables.
- Network RTK solution from SOI established CORS network is preferred. In the absence of CORS signals, static surveys and post processing shall be carried out.
- Control point/check point horizontal accuracy - 03 cm or higher
- Control point/check point vertical accuracy - 05 cm or higher
- Two GCPs for every 3 sqkm.
- One check point for every 0.5 sqkm

Surveying of Ground Control Points (GCPs)

The GCPs for block adjustment and checkpoints shall be extended from SoI CORS network base stations. The following points shall be kept in attention while selecting control point/check point locations:

- Clear of HT/LT lines, radio / mobile towers, high-frequency dish antennas, radar etc.
- Free from multipath problems associated with tall features in the vicinity.
- Free from foliage
- Free from major obstructions / obstacles
- Easily accessible to the survey team.
- Open to the sky with a clear view towards the sky at a 15-degree angle with a horizontal plane.
- All control points shall be either pre-targeted or shall be sharp permanent ground features which shall be visible clearly on the drone images.
- The proposed points shall be marked clearly on the flight plan.
- The Pre-targets shall be painted with contrasting colours as that of the terrain so that those points are clearly visible and seen on the drone / surveyed photograph.

Clearances for flying

- The Agency is responsible to obtain necessary clearances from Director General of Civil Aviation, Ministry of Defense and other agencies of Government of India or concerned State Government as may be required to complete the job of flying over the Area of Interest (AoI), acquire image data using Drone Survey etc. The Client would provide necessary documentation; however, getting clearance would be the entirely the responsibility of the consultant.
- DGCA Guide lines, Drone Rules 2021 and its amendments issued time to time should be complied.
- Only certified Drone pilot license holder should operate drones.
- Drones should have UAN and type certified.
- Drone should have third party insurance.
- Vendor Should use digital sky's interactive aerospace maps for identifying Green, Red, Yellow Zone areas.

Flight Planning

- The flight path shall cover the desired area completely including enough cross flight lines to eliminate shadowing and allow for proper quality control.
- Flight line forward overlap should be 80% & side overlap should be 70% or greater. In the high rise areas, the overlap has to be increased so that the most nadir pictures are used for ortho generation which shall have minimal tilt from high altitude buildings / trees.
- Data collections in high relief terrain should have greater overlap. Any data with gaps between the geometrically usable portions of the swaths will be rejected.
- Buffer area of 50 m shall be covered in the flight planning for the given boundaries. The data coverage / processing for the buffer areas are not considered as additional area in terms of total area both for physical progress and financial calculations.

Drone Data Acquisition

The contractor will acquire high-resolution 3 cm GSD or better images using drone fitted with digital cameras as per the technical specifications with forward overlap of 80% & side overlap of 70% or greater. The consultant must use ground control already established with reference to SOI GCP library or CORS network for the base stations for drone flying and GCP or check points related activities. The data acquisition should be carried out meeting the following conditions:

1. Drones enabled with PPK GNSS system only be used.
2. Data acquisition should be done using oblique RGB sensor system for achieving photo realistic 3D textured model.
3. Oblique photogrammetry captures images from Nadir and from 4 directions.
4. Flight path – Grid pattern
5. Oblique Camera tilt angle – > 45 Degree.
6. Minimum 24 MP pixel for each camera
7. Acquisition GSD – 03 cm or better
8. Sun angle - no less than 30 degree to minimize shadow. Also data captured should not have more saturation.
9. The project site has relief changes due to built-up area therefore photograph should be captured at high sun angle to avoid shadows due to these high relief formations.
10. Haze free with minimal smoke, smog, fog and dust.
11. To avoid breaks within individual flight lines.
12. Open space should be chosen for the flight and landing of drone to avoid endanger to public or property.

360 degree image acquisition is required for the purpose of creating the texturized (as per ground reality) 3D Reality Mesh Model. i.e the objects on the ground should be visible / photographed from all directions without any shadow areas.

Bidders can propose any other technology or combination of technologies (like aerial /, terrestrial LIDAR / street view photography along with Drone data etc.) for the purpose of ground realistic texturized 3D Reality Mesh Model. However, the top view shall be from the acquired drone images only.

Drone data processing

Block Setup

The contractor will provide high-resolution 3 cm GSD or better ORI and DSM of 10 cm posting or better to achieve the desired ortho image accuracy after post processing of drone data. The accuracy of the ORI will be checked using the check points. The consultant will ensure Proper versioning, file naming.

- A photogrammetry block for drone data adjustment can be created for minimum 4 sqkm area.
- Common photographs shall be included in each of the overlapping areas of blocks.
- Every block shall have minimum GCPs and Check points, in a distributed manner in the entire block as mentioned.
- Accuracy the block adjustment results will be checked using the check points.
- The block adjustment results shall not be more than 2 times pixel size in position and 3 times pixel size in height. The number of check points mentioned in the control survey option is to be adhered with for independent data validation.

DSM / DEM / DTM

- The Digital surface model shall be created from all the acquired photographs after acceptance of block adjustment results. The digital surface model shall be created after block adjustment through automatic mode. The DSM shall be reviewed digitally and visually. Any anomalies and errors in the data should be removed and smoothened which can generate the ortho photo without distortion and meeting the accuracy requirements.
- Apart from the DSM, an accurate DTM and contour of 0.25 m interval is to be generated. The surface features need to be removed and the DTM shall be flattened in the areas of water / rails, roads – as appropriate.
- The DSM / DTM generated across models / project areas shall not have more than 20 cm height variation.

Ortho Rectified Imagery

- 3cm GSD or better resolution Ortho imageries shall be created for the entire project area and the 50 m buffer all around using the DSM / DTM, as appropriate. No distortion of elevated structure and buildings shall be accepted as the data will be used for mapping and subsequent tax calculations.
- The images shall be three band natural color imagery depicting the true colors on the ground.
- For the purpose of ORI generation, the most nadir photographs shall be used so that the distortion / relief errors are very minimal.
- Ensure that, during ortho-rectification process, presences of warped and misaligned ground transportation features should be avoided.
- All images should be clear and sharp in detail with no light streaks, static marks, scratches, ice effect or other noticeable blemishes. The imagery should be free from defects, such as out-of-focus imagery, and should not contain inconsistencies in tone and/or density.
- The ortho-rectified image should be free from tilt and relief displacement. To ensure consistency, the imagery should be radiometrically and geometrically corrected to enable adjacent files to be displayed simultaneously without obvious distinctions between them.

- For generating the ortho photo and mosaic process, digitization of seamlines / breaklines if any shall be digitised which shall ensure the creation of accurate ortho photos with no distortions on the buildings outlines and captured from the near nadir view photographs.
- The mosaicking process shall minimize image distortions and smearing and produce a color balanced seamless edge-matched product across block or project areas
- The absolute accuracy of Ortho mosaic shall have positional accuracy of better than 10 cm @ 95% confidence interval. A checklist shall be submitted for each grid / project area on the accuracies achieved against the surveyed check and control points.
- The ORI data shall be submitted in an Uncompressed GeoTIFF and/or lossless Compressed JPEG2000 or ECW format
- If more than 5% of the ORI that are subjected to external QC fail to meet the specifications laid down in this RFP, all products will be returned to the service provider for further QA to identify the extent and cause of the problems so established. The contractor will have to rectify these problems, and (where necessary to comply with the specification) make new products at their own cost.
- The ortho images shall not have any obstruction / distortion and quality errors. If present, the complete project / block area shall be rejected and shall be reflown and re submitted.

Texturised 3D Reality Mesh Model from DSM point cloud and Photos

- Accurate geo-referencing and 3D models are expected which needs to be texturized from the photographs. The photographs acquired from drone images / oblique / terrestrial images shall be used for automatic texturing on the DSM surfaces.
- The textured 3D Reality Mesh models need to be delivered grid wise. All delivered 3D tiles shall have a buffer of 50 m additional to the given grid / tile boundaries so that visualisation across the borders is seamless. For the buffer areas also accurate data processing is to be carried out to cater to the boundary anomalies that may arise, later.
- The 3D models shall be submitted in .3MX / Cesium tiles format
- The bidder needs to explain the complete process of ground realistic texturized 3D Reality Mesh Model , in detail. It shall include the software, hardware, methodology adopted, QA / QC process and formats of raw data creation and exported tile format as per the RFP.
- Bidders need to propose the methodology and demonstrate the 3D Reality Mesh Model for 0.5 sqkm area at the time of technical evaluation

Coordinate System

- All data and deliverables shall be submitted as per the below spatial coordinate system.
- a. Horizontal Reference frame

  Datum : WGS84

  Projection : UTM 43
- b. Vertical Reference Frame

  Datum : WGS84 Ellipsoid

- All units shall be in meters.

3D model Generation and Visualization software

The contractor is expected to use the software which is capable of generating the 3D models more effectively and accurately. The broad specifications and capabilities of the software proposed to be used by the contractors and the desired results are given, below.

- Processing should be done using software similar to Skyline Photo mesh, Bentley context capture, DJI Terra, Smart 3D etc.
- Software should able to accelerate the processing by using multi-core, GPU hardwares and multi-computer processing.
- Check points should be used in the block adjustment process.
- Photogrammetry block – Triangulation network adjustment RMSE should be better than 0.5 GSD.
- Automatic multi resolution 3D point cloud meshes shall be generate.
- High-fidelity 3D engineering-ready reality meshes with combination of Hybrid inputs (Images from drone, handheld camera, point cloud data) shall be generated thus providing scalability.
- The fine details of the building with sharp edges, and geometric accuracy shall be maintained.
- Software used for 3D tile model should allow adaptive tiling which creates tiles to process individually to preserve RAM Space.
- Produced mesh output shall contain multiple levels of details including simplified geometry layers to allow fluid navigation in the 3D model.
- The produced model should be interoperable with all standard CAD & 2D/3D GIS Software.
- 3D model visualisation shall enable to visualize other products like terrain, 3D maps, 2D Maps draped on the 3D mesh, generating cross-section, contours etc.
- Meshes should be possible to be integrated with Virtual Reality applications if needed.
- A produced model should be viewed and analyzed in a web browser.
- Robust and Flexible Publishing Capabilities to produce and publish 3D visualization-ready models through a variety of formats.
- Data formats shall be submitted in 3D tiles in .3MX file or CESIUM tiles. It shall support in creating other formats like OBJ, Collada, I3S, FBX and more, for use in industry-wide design applications.
- Ability to handle Surface Constraints Option for reflective Surfaces like water bodies.
- Software shall have the ability to unleash the power of Machine Learning on the produced 3D mesh for object recognition and for fast displaying and visualization of multi-resolution meshes

- Software should allow the reality mesh in Splat display after aero-triangulation for faster insight of the project. Also it shall display the full resolution photos for analysis and quality assessment using photo navigation.
- Shall have the facility to access information linked to the 3d objects from the reality mesh.
- Software should enable Shareability in a connected data environment to stream 3D meshes across project teams and interoperability with other software
- Software should be able to perform automatic registration of photos and point clouds to shorten the aerotriangulation stage and improve its accuracy to provide high fidelity 3D engineering-ready reality meshes for use in engineering and GIS software.
- Reality Modeling solution should Enable Users to Design in Digital Context
- Much better integration with design + reality meshes
- Software should Support positioning data including GPS tags and control points, and allow us to precisely measure coordinates, distances, areas, and volumes
- Software should enable productivity of higher quality mesh retouch with limited clicks
- Software should allow Real-Time Mesh Classification, which allows access to business information about assets in a 3D realistic environment

Quality Control/ Quality Assurance

Quality Control/Quality Assurance (QC/QA) of the Drone data and/or derived data at various stages of Project including validating horizontal and vertical accuracy as per specifications laid down in RFP will be the responsibility of the Service Provider. The purchaser may perform additional QC/QA testing.

6.7 Deliverables

The list of deliverable to be submitted by the consultant and its content after each step is as follows

Drone Survey

- Details of control points/check points -processed coordinates of all points along with photographs.
- Observation data in RINEX format wherever applicable
- GNSS Network Adjustment Report if static survey done.
- The list of base stations along with number coordinates and photographs of points with description used for each flight for each drone flight in each day.
- Raw Drone Images with the PPK points.

- Flight plan details such as flight path including time, date of fly, position, image start and end number for each flight and orientation parameters for each observation(s).
- Block Setup and block triangulation adjustment results and reports.

DEM /DTM and Contours

- DSM as Colour point cloud in LAS/LAZ format.
- DSM as 10 cm regular grid – geo tiff format.
- DTM as 25 cm regular grid – geo tiff format
- Absolute vertical accuracy (LE 95) of DSM and DTM should be better than 20 cm.
- DEM / DTM with regular grid and additional points / breaklines generated in the DEM editing process.
- Smooth Contours at 25 cm interval.

Ortho Rectified Image

- Seamless, colour balanced ORI for the entire AoI. Can be tiled as 1 km x 1km
- No distortion in buildings/elevated structures.
- Absolute horizontal accuracy (CE 95) of ORI should be better than 10 cm
- ORI image in uncompressed Geotiff and compressed JP2000/ECW formats.

3D Tile Model

- 3D mesh model that truly reproduces even small-scale details such as cars, trees, fences, and walls - all with advanced color balancing and high-quality texturing.
- 3D models format – 3MX/3DML/OSGB/DAE/OBJ/Cesium tiles
- 3D Tile is designed for streaming and rendering massive 3D geospatial content such as 3D Buildings, Instanced Features, and Point Clouds.
- 3D tile model generated Tile wise

6.8 Time Schedule

The Project is expected to be completed within 14 weeks' time from the date of signing of the agreement. The schedule is given below. The bidders are expected to estimate the resources required for the entire project and submit their own schedule which will be a part of the project management plan.

Sl. No	Milestone	Deliverables from Agency	Time Line in Weeks
1	Submission of PBG and Contract Sign-	PBG for 10% of total contract value	T

Sl. No	Milestone	Deliverables from Agency	Time Line in Weeks
	off		
2.	Project initializatio n	Office establishment and team mobilization, training and orientation	T to T+1
3.	Implementatio nPlan	Submission of methodologies adopted, GPS survey plan, drone survey acquisition and processing plan,	T+1 to T+2
4.	25 % of the work completion	Deliverables and quality standards as specified in the RFP	T+ 3 to T+5
5.	25 % of the workcompletion (totally 50% of thework should be completed)	Deliverables and quality standards as specified in the RFP	T+6 to T+7
6.	25 % of the workcompletion (totally 75% of thework should be completed)	Deliverables and quality standards as specified in the RFP	T+8 to T+9
7.	25 % of the workcompletion (totally 100% of the work should be completed)	Deliverables and quality standards as specified in the RFP	T+10 to T+ 11
8.	Final deliverables acceptance fromthe Client.	Deliverables and quality standards as specified in the RFP	T+12 to T+14

T = Date of signing the Contract

6.9 Project Monitoring Unit (PMU)

A Project Monitoring Unit shall be established by BDA for monitoring the project execution. The unit shall collect and collate daily / weekly / monthly progress from various packages and monitor the work & report. PMU shall also address any issues raised by the contractors as and when needed. It shall act as a facilitator in interacting with the contractors in transferring the data for quality checks, feedback, etc. The project manager of the contractor shall be submitting reports to PMU and shall submit all the information required/sought by the authority to PMU. All the final deliverables shall be made to PMU. All the bills shall be submitted to authority through PMU with proper certification as prescribed.

6.10Format of Commercial Offer

The bidder has to submit the commercial quotes offering as per the prescribed format available on the Karnataka e -procurement portal . The bidder shall quote the total lumpsum cost (inclusive of GST and other taxes). Bidder shall not quote the unit rate per sqkm.

Appendix 1 – Covering Letter

(To be submitted in firm/ company letter head)

To,

The Commissioner
Bangalore Development Authority
T Chowdaiah Road
Kumara Park (West)
Bengaluru – 560 020

Sir,

Subject: Hiring Services for Drone Survey Based 3D Model Generation for BDA Area (Excluding BBMP)

Reference: Tender No: <TENDER REFERENCE NUMBER> Dated <DD/MM/YYYY>

We, the undersigned Bidders, having read and examined in detail all the bidding documents with respect to Hiring Services for Drone Survey Based 3D Model Generation for BDA Area (Excluding BBMP), do hereby propose to provide our services as specified in the Tender.

Technical Response

We confirm having submitted the information as required by you in your Request for Proposal document. This is enclosed in our technical bid. In case you require any other further information/documentary proof in this regard for evaluation of our bid, we agree to furnish the same in time to your satisfaction.

EMD

We have paid the prescribed EMD through the portal (http://kppp.karnataka.gov.in). This EMD is liable to be forfeited in accordance with the relevant provisions of the Tender.

Deviations

We declare that all the services shall be performed strictly in accordance with the bid documents and there are no deviations from the requirements mentioned in this Tender.

Performance Bank Guarantee

We hereby declare that in case the contract is awarded to us, we shall submit the contract performance bank guarantee in the form prescribed in the Tender.

Validity of this Bid

We agree to abide by this tender response for a period of 90 days after the date of opening of Technical Bids prescribed by the BDA, and it shall remain binding upon us with full force and virtue, until within this period a formal contract is prepared and executed, this tender response, together with your written acceptance thereof in your notification of award, shall constitute a binding contract between us and BDA.

We undertake, if our proposal is accepted, to adhere to the implementation plan for the Proposed work at BDA put forward in the Tender or such adjusted plan as may subsequently be mutually agreed between us and BDA or its appointed representatives.

We hereby declare that our bid is made in good faith, without collusion or fraud and the information contained in the bid is true and correct to the best of our knowledge and belief.

We understand that our bid is binding on us and that you are not bound to accept a Bid you receive.

It is hereby confirmed that I/We are entitled to act on behalf of our company/ corporation/ firm/ organization and empowered to sign this document as well as such other documents, which may be required in this connection.

Thanking you,

Yours faithfully

(Signature of the Authorized signatory)

Name :

Designation :

Seal :

Date :

Place :

Business Address:

Appendix 2 - Particulars to be submitted by Bidder

Sl. No.	Particulars	Details	
1	Name of the Bidder		
2	Address of the Bidder	Head Quarters	Bengaluru
3	Status of the Company (Public Ltd/ Pvt. Ltd/LLP)		
4	Details of Incorporation of the Company *	Date:	
		Ref. #	
5	Details of Commencement of Business *	Date:	
		Ref. #	
6	GST Registration No. *		
8	PAN No. *		
9	Name & Designation of the contact person to whom all references shall be made regarding this tender		
10	Telephone No. (with STD Code)		
11	e-Mail of the contact person:		
12	Fax No. (with STD Code)		
13	Website		
14	Financial Details (as per audited Balance Sheets) (in lakhs)		

	Year	2019-2020	2020-2021	2021-2022
	Net Worth			
	Turn Over			
	PAT			
15	Details of Previous Experience (Refer Sl.No.23(9) of Sec.2)			
Sl. No.	Details of Drone Survey	Duration (From – To)	Client	Value of the Order
i				
ii				
iii				
16	Details of Manpower (Refer Sl.No.23(13 &14) of Sec.2)			
i	Project Co-ordinator	Please submit CV of 3 Professionals capturing details to ascertain minimum qualification and experience criteria specified in the tender document.		
ii	Drone Data Processing Specialist – 1			
iii	Drone Data Processing Specialist – 2			

* Enclose a copy of the certificates (Refer qualification criteria table,)

Appendix 3 - Undertaking on being NOT Blacklisted

This is to certify that << COMPANY / PARTNERSHIP FIRM NAME >> is not blacklisted by the Government of Karnataka or any of its agencies for any reasons, whatsoever and not blacklisted by Central / any other State / UT / Government, or its agencies for indulging in corrupt, or fraudulent practices or deficiencies of services or for indulging in unfair trade practices as on till date.

Company Secretary / Authorized Signatory

Name of Signatory:

Bidder Name:

Date

Place

Appendix 4 – Turnover Details

TO WHOMSOEVER IT MAY CONCERN

This is to certify that the annual turnover from the drone survey, GPS survey-related activities furnished by << COMPANY NAME >> for the last 3 years i.e. 2020-21, 2021-22 & 2022-23 are given below . This is as per the Statement of Accounts which has been duly verified by me and found correct.

Financial year	**Total Turnover of the Company (Rs. in Lakhs)**	**Total Turnover from the drone survey, GPS survey related activities (Rs. in Lakhs)**
2020-21		
2021-22		
2022-23		

Place:
Date:
Seal & Signature Chartered Accountant

Appendix 5 - Format for declaration of availability of number of Drones, GNSS receivers, software and hardware

(on firm/ company letterhead)

To,

The Commissioner
Bangalore Development Authority
T Chowdaiah Road
Kumara Park (West)
Bengaluru – 560 020

Sir/Madam,

Subject: **Confirmation of availability of Drones, GNSS receivers software and hardwares with all necessary associated accessories to carry out the work**

Reference: Tender No: <TENDER REFERENCE NUMBER> Dated <DD/MM/YYYY>
Sir,

I have carefully gone through the Terms & Conditions contained in the Tender document [No. ……..] towards ……I declare that we, <firm name> have all necessary Drones, GNSS receivers, software and hardwares with associated accessories systems to carry out the activity, as per the Scope of work, defined. The details are given below.

Sl. No	Drone/GNSS receivers/Software/Hardware	Quantity	Remarks
1.			
2.			
3.			
4.			
5.			

Yours faithfully,

(Signature of the Bidder)
Printed Name
Designation
Seal
Date:
Business Address:

Appendix 6 - Format for Declaration of Acceptance of Terms and Conditions in Tender

(in firm/ company letter head)

To,

The Commissioner
Bangalore Development Authority
T Chowdaiah Road
Kumara Park (West)
Bengaluru – 560 020

Sir/Madam,

Subject: Hiring Services for Drone Survey Based 3D Model Generation for BDA Area (Excluding BBMP)

Reference: Tender No: <TENDER REFERENCE NUMBER> Dated <DD/MM/YYYY>

Sir,

I have carefully gone through the Terms & Conditions contained in the Tender document [No. ……..] towards Drone Survey Based 3D Model Generation for BDA Area (Excluding BBMP)

I declare that all the provisions of this TENDER/Tender Document are acceptable to my company. I further certify that I am an authorized signatory of my company and am, therefore, competent to make this declaration.

Yours faithfully,

(Signature of the Bidder)

Printed Name

Designation

Seal

Date:

Business Address: